NASA Glenn Safety Manual

CHAPTER 21 - MISHAP REPORTING/ACCIDENT INVESTIGATION

Revision Date: 12/99

21.1 SCOPE

This chapter complements NPD 8621.1G, "Mishap Reporting and Investigating Policy", by providing additional details governing reporting and investigating mishaps to determine their causes, implement corrective actions, and document and disseminate lessons learned for the purpose of mishap prevention.

21.2 APPLICABILITY

The provisions of this chapter are applicable to the Cleveland Center and Plum Brook Station.

21.3 AUTHORITY

The authority for this chapter derives from NPG 8715.Draft 2, "NASA Safety Manual Procedures and Guidelines," and NPG 8621.Draft 1, "NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping".

21.4 POLICY/PROCEDURES

Glenn Research Center (GRC) policy requires that employees should promptly report any mishap that occurs, including fire; explosion; natural disaster; equipment or test failure; plant, vehicle, or aircraft accident; environmental or other incident; and close calls. When a mishap is reported, the procedures specified herein are to be followed for responding to the emergency, securing the mishap area, and initiating a reporting sequence to Center and NASA Headquarters personnel as required depending on the type of mishap.

These requirements and procedures are to inform all GRC employees, contractors, and visitors about emergency notification, mishap investigation, reporting mishaps that occur during Glenn operations, and those mishaps which involve NASA or contractor personnel, the public, and/or NASA property.

21.5 DEFINITIONS

NASA MISHAP

An event that causes unplanned occurrence or event resulting from any NASA operation or NASA equipment anomaly, involving injury or death to persons, damage to or loss of property, or equipment, or mission failure.

NASA REPORTABLE MISHAP

Any work-related mishap resulting in death, permanent disability, or hospitalization of three or more persons; an occupational injury or illness which results in a lost workday case or medical treatment beyond first aid, loss of consciousness, restriction of work or motion, or transfer to another job; or damage to, or loss of, equipment or property damage equal to or greater than $1,000. Mission failures and close calls with potential as a Type A or B mishap are also reportable.

TYPE A MISHAP

A mishap causing death and/or damage to equipment or property equal to or greater than $1,000,000. This includes mishaps resulting in damage to aircraft or space hardware (e.g., flight and ground support hardware). This definition also applies to a test failure if the damage was unexpected or unanticipated or if the failure is likely to have significant program impact or visibility.

TYPE B MISHAP

A mishap resulting in permanent disability to one or more persons, or hospitalization (for other than observation) of three or more persons, and/or damage to equipment or property equal to or greater than $250,000, but less than $1,000,000. Mishaps resulting in damage to aircraft or space hardware that meet these criteria are included, as are test failures where the damage was unexpected or unanticipated.

TYPE C MISHAP

A mishap resulting in damage to equipment or property equal to or greater than $25,000, but less than $250,000, and/or causing occupational injury or illness that results in a lost workday. This includes mishaps resulting in damage to aircraft and space hardware as well as test failures when the damage was unexpected or unanticipated.

INCIDENT

A mishap consisting of personal injury of less than Type C Mishap severity but more than first-aid severity, and/or property damage equal to or greater than $1,000, but less than $25,000.

CLOSE CALL

An occurrence in which there is no injury, no equipment/property damage equal to or greater than $1,000, and no significant interruption of productive work, but which possesses a high severity potential for any of the mishaps defined as Types A, B, C Mishaps, Mission Failure, or Incident.

TEST FAILURE

Unexpected damage of research hardware, including support test hardware or instrumentation, but no significant test facility damage. Test failures can be minor (e.g., combustor lines erosion), in which case they are to be reported through run reports, or they can be significant (e.g., combustor lines burnout) in which case damage is to be reported directly to the Division Chief. of GSO to be notified verbally of significant test failures.

MISSION FAILURE

Any mishap (event) of such serious nature that it prevents accomplishment of a majority of the primary mission objectives; a mishap whose intrinsic severity, in the judgment of the Program Associate Administrator in coordination with the Associate Administrator for Safety and Mission Assurance (SMA), prevents the achievement of primary mission objectives as described in the Mission Operations Report or equivalent document.

CONTRACTOR MISHAP

An unplanned occurrence, event, or anomaly that may be classified as a Type A, B, or C mishap, an incident, or a mission or test failure that involves GRC contractor personnel or equipment in support of operations. A contractor mishap is normally investigated by the contractor and reviewed by GRC; however, depending on circumstances, it may be investigated separately if the Chief of GSO so decides.

ILLNESS

Any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases, which may be caused by inhalation, absorption, ingestion, or direct contact.

MEDICAL TREATMENT

Involves the provision of medical or surgical care for injuries that are not minor through the application of procedures or systematic therapeutic measures.

FIRST AID TREATMENT

Any one-time treatment, and any follow-up visit for the purpose of observation, minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care. Such one-time treatment, and follow-up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

21.6 TERMS

COSTS

Direct costs of repair, retest, delay, replacement, or recovery of NASA materials, including hours, material, and contract costs but excluding indirect costs for cleanup, investigation, injury, and normal operational delay.

NASA MISHAP INVESTIGATION BOARD (MIB)

A NASA-sponsored board, consisting of a single individual, or a group of individuals, with expertise in the area under investigation which is appointed to investigate a NASA Mishap. Board members must not have any vested interest in the outcome of the investigation. Board members may be selected from NASA, or other Government agencies. Observers may be obtained from these same sources or from non-Government sources, such as consultants.

APPOINTING OFFICIAL

The official with the responsibility to perform the following:

- Determine the level of investigation, the type of investigation, and the NASA MIB membership.
- Accept the initial NASA MIB report as fulfilling the requirements of the investigation.
- Ensure closure of approved corrective actions.
- Is authorized to appoint an independent single investigator or Mishap Board.
- The Appointing Official should have management responsibility over all organizations, which are likely to take corrective action as a result of the mishap.
- The one person wholly responsible for the independent investigation process.
- Responsible for appointing an independent Mishap Board/Independent Investigator. Providing administrative and logistical support to the Mishap Board/Independent Investigator. Accepting the Mishap board/Independent Investigator findings, directing the responsible organization to develop a Corrective Action Plan, approving the Corrective Action Plan, tracking and closing corrective actions, and producing a summary report of all mishap related activities upon completion.

CORRECTIVE ACTIONS

Changes to design processes, work instructions, workmanship practices, training, inspections, tests, procedures, specifications, drawings, tools, equipment, facilities, resources, or material that result in methods that will prevent, minimize, or limit the potential for recurrence of a mishap.

LESSONS LEARNED

Knowledge or understanding gained by experience. The experience may be positive, as in a successful test or mission, or negative, as in a mishap of failure. Successes are also considered sources of lessons learned. A Lesson Learned must be significant in that is has real or assumed impact on operations; valid in that it is factually and technically correct; and applicable in that it identifies a specific design, process, or decision that reduces or eliminates the potential for failures and mishaps, or reinforces a positive result.

LOST-TIME INJURY/ILLNESS

A nonfatal traumatic injury that causes any loss of time from work beyond the day or shift on which it occurred; or a nonfatal non-traumatic illness that causes loss of time from work or disability at any time.

VALIDATING ORGANIZATION

The Validating Organization is the SMA organization responsible for developing the record impoundment plans, familiarizing the Mishap Board/Independent Investigator with the mishap investigation process, distributing findings and Corrective Action Plans to other interested organizations, supporting the Appointing Official in his/her assessment of proposed corrective Action Plans, corrective action completion, and assessing the effectiveness of completed corrective actions.

INTERNAL MISHAP INVESTIGATION

A mishap investigation conducted by the organization which had the mishap, or by the organization's safety personnel. This type of investigation is not considered independent since the personnel performing the investigation may have a vested interest in the results of the investigation.

INDEPENDENT INVESTIGATION

If the Appointing Official decides that an independent investigation is required and a single investigators acceptable, he/she will select a single independent investigator. The Independent Investigator will investigate the mishap using similar rigor and techniques as a multi-person Mishap Board.

BOARD SAFETY ADVISOR

An ex-officio member of the board, generally from the SMA organization, who is familiar with the mishap board process and provides assistance to the Mishap Board and the Appointing Official in keeping the mishap board investigation process on track.

EMERGENCY

A state arising from unforeseen circumstances that requires immediate action to limit or contain a situation (such as fire, natural disaster, equipment failure, plant accident, vehicle accident, aircraft accident, etc.) that threatens injury to people or damage to property.

ENVIRONMENTAL INCIDENT

A health-related environmental incident including, but not limited to, the following (which may or may not constitute emergencies):

- Mercury spill
- Oil spill
- Release of toxic or other hazardous material that causes, or threatens to cause, concentrations of such materials in air or water to exceed established vs. regulatory limits.
- Unauthorized releases of toxic or other hazardous materials, or releases of large quantities of other materials, into sanitary, industrial, and/or storm sewer systems.
- Any condition that cause or threatens to cause an individual to be exposed to excessive noise levels, radiation levels, etc.

ENVIRONMENTAL HEALTH & SAFETY HELP LINE SYSTEM (EH&S)

A specific channel of communications for NASA Glenn civil servant and contractor employees to use for reporting any safety, health, or environmental concern. Any concerns that are potentially hazardous to personnel, facilities, hardware, equipment, or the environment at the GRC or Plum Brook Station should be reported. The EH&S Help Line is under the supervision of the Glenn Security Management Office. Any individual may contact the Help Line at (216) 433-8848. All emergencies and/or chemical spills that require an immediate response should be called into the Center Dispatcher by Dialing 911 from the nearest NASA GRC phone.

NASA SAFETY REPORTING SYSTEM (NSRS)

A confidential, voluntary, and responsive safety reporting system that provides a direct channel for NASA employees and contractors to notify the NASA Safety and Risk Management Division of safety concerns. The NSRS enables safety personnel to identify

safety problems and implement corrective actions independently. The NSRS forms can be found at each building in a designated area.

21.7 RESPONSIBILITIES

Glenn Employees

a. Promptly report mishaps and close calls.
b. Report the injury or illness to your supervisor.
c. Get prompt medical treatment or first aid at the Occupational Medicine Services (OMS).
d. If you go to OMS for an injury/illness they will provide you a copy of the "NASA Medical Safety Incident Report" (NASA Form [NF] 1627B). You will be responsible for giving your supervisor/company the form.
e. If you work outside of normal working hours and OMS in closed and go to a doctor/hospital, you must report any job-related injury or illness to OMS and to your supervisor during the next working day.
f. If you notice an injury or illness off duty, you must report it to your supervisor and OMS during the next working day.
g. If you see your own doctor for a job-related injury or illness you must report your doctor visit to your supervisor and OMS at the start of the next working day.
h. If you go to a hospital for a job-related injury or illness you must report your hospital stay to your supervisor and OMS when you return to work.
i. If you think that you have been exposed to a hazardous material or condition, whether you notice any symptoms or not, you must report the incident to OMS and to your supervisor immediately.
j. If you are a civil servant that sustained a work-related injury, OMS will provide you a package on how to file a claim. You may be entitled to medical care and other benefits associated with this injury as provided by the Federal Employees' Compensation Act, better known as Office of Workers' Compensation Programs. As a contractor you must immediately give notice to your employer, in writing, of the injury or occupational disease and the date of accident or notice of the occupational disease.
k. If you see an injured person and the injury or illness is minor take them to OMS. If the injury is serious or you are unsure about what to do, stay with the injured or ill person and have someone in the area request an ambulance. Never move an unconscious or seriously injured or ill person unless he or she is in physical danger. Stay with the injured or ill person until medical help arrives. Since you are a witness to the scene of the injured or ill person, you may be asked by the Glenn Safety Office to write a brief statement.

Glenn Supervisors

a. If an accident, injury, illness, or close call occurs, it must be reported immediately to the Chief, GSO. Fill out and submit the oral/written mishap report within 24

hours to the Chief, GSO. Refer to Section 21.8 "Reporting Injuries/Illnesses and Close Calls" for instructions.

b. Investigate all Type C mishaps, incidents, first aid injuries, and close calls.
c. Take necessary actions to correct hazards discovered during your investigation. This includes temporary measures to protect your employees while you wait on building or equipment changes.
d. Improve on your corrective action periodically.
e. Support mishap investigation boards as necessary.
f. Always remind your employees that reporting close calls and mishaps is necessary.
g. Review mishap information. Tell your employees what you learn from your analysis and what actions you plan to take.
h. Monitor the recovery of any employee with a lost-time injury. Arrange for that employee to return to work on light or restricted duty as soon as possible.
i. Provide follow-up data such as total time lost from work, end of restricted duty, or final costs to the Administrator, GSO.

Facility Manager

a. Respond to close calls and mishaps that occur in your facility.
b. Make sure close calls and mishaps that occur in your facility are reported and investigated.
c. Investigate close calls.
d. Support mishap investigations as necessary.
e. Make sure that employees in your facility know about corrective action plans and lessons learned.

Organizational Director

a. Develop processes for reporting and investigation of close calls and mishaps that occur in your directorate.
b. Approve final reports and corrective action plans on a "NASA Mishap Report" (NASA Form [NF] 1627) for mishaps that occur in your directorate.
c. Review mishap information, open close call or mishap reports in your directorate. Make sure the mishap reports are closed in a timely manner.
d. Provide services from your directorate that other GRC organizations need to correct hazards found during investigations such as testing, evaluating data, modifying buildings or equipment, or sampling work areas.

Chief, Glenn Safety Office (GSO)

a. Serve as the Center focal point for receiving all oral and written mishap reports and notifying the NASA Safety and Risk Management Division (Code QS) at NASA Headquarters of such incidents in a timely manner.

b. Ensure that the policies and procedures for reporting, investigating and documenting mishaps and for taking corrective action are implemented at the Center.
c. Provide GRC with a list of personnel trained in mishap investigations.
d. Determine the type of investigation required and who will be involved in the investigation of a mishap.
e. Providing training in investigative techniques and in processing the oral/written mishap reports.
f. Review and approve mishap reports and corrective actions.
g. Evaluate mishap reports for possible Lessons Learned.
h. Verify that corrective actions are completed.
i. Do trend analysis and other statistical analyses of close calls and mishaps.
j. Review mishap data and make recommendations to line manager's ways they can improve their safety and health performance.
k. Receives reports from the Administrator, GSO to show the upper management Lost-Time Injuries and Work Days, Lost Time Rate for GRC Civil Service employees, Body Part Injuries with percentage, etc. This information is used for trending purposes for safety related areas.

Administrator, Glenn Safety Office

a. Receive email notification from OMS that an injury/illness occurred and the NF1627B has been submitted. Review the NF1627B to determine if the case is recordable or non-recordable. If the case is recordable, a NF1627 will be submitted to the supervisor. If the case is not recordable, it will go to the GSO, Chief for signature and corrective actions.
b. Receive "NASA Initial Safety Incident Report" (NASA Form [NF] 1627A from GSO, Chief. The information from the NF1627A will be entered into the Incident Reporting Information System (IRIS) Suite database to record the case. The database will automatically assign it a case number. The NF1627A will be placed on hold until the NF1627 is received.
c. Receive and review the NF1627. Check for errors or omissions and returning it to the submitter for further information if needed. If the form is completed properly, the finalized information will be entered into the IRIS database.
d. Input and maintain the IRIS Suite Database.
e. Track reported mishaps to closure.
f. Maintain the original documents of the NF1627 and NASA Mishap Investigation Board Report files. Keep on file for two years and then send to Federal Record Center (FRC) for retention.
g. Submit monthly, quarterly, and yearly reports to the Chief, GSO.
h. Train person(s) on how to use IRIS.
i. Records, maintains, and post the Occupational Safety and Health Act (OSHA) Form 200, "Log and Summary of Occupational Injuries and Illnesses" for NASA GRC Civil Service employees.

Occupational Medicine Services (OMS)

a. Responsible for providing the medical or pathological information required fulfilling the requirements of this chapter under the Privacy Act of 1974.
b. Responsible for providing any necessary occupational health and industrial hygiene support required by other GRC organizations to fulfill any of the responsibilities of this chapter.
c. Responsible for retaining medical reports in a confidential/privileged files so that the inadvertent release is prevented.
d. Inform the employee's supervisor and the Chief, GSO immediately of a fatality or of a suspected disabling injury or illness.
e. Fill out a NF1627B when an employee has an injury or illness on the job. Submit the NF1627B to the Administrator, GSO. A copy of the form will be given to the employee. The employee is responsible for giving the form to his/her own supervisor/company.

Environmental Management Office (EMO)

The Environmental Management Office is responsible for investigating health-related environmental incidents and providing support, as required, for mishap investigations.

Executive Safety Board (ESB)

All Type B and sometimes Type C mishap investigations will be reviewed and approved by the Executive Safety Board. If the ESB does not agree with the findings, the investigation team will re-review the incident data, reports, etc, and revise the report. If the ESB approves the report the team may continue the investigation process.

Security Management Office (SMO)

a. Make sure that mishap scenes are secured.
b. Make sure that evidence and relevant information are preserved for the investigation.
c. Investigate each motor vehicle accident and send a completed NF1627.

Legal Office

a. Have ground rules to protect the privileged status of witness statements, witness testimony, or other matters related to a mishap.
b. Make sure that all board appointments for GRC meet legal requirements.
c. Review mishap information or reports before they are released from GRC control to make sure the facts are correct and can be released.

Community and Media Relations Office

a. Prepare releases of any mishap information to the news media or other organizations outside GRC.
b. Have the GRC Legal Office and anyone else connected with the mishap, such as the mishap investigation board chairperson, review information to make sure that the facts are correct and can be released.
c. Protect the privileged status of witness statements, witness testimony, and other matters related to a mishap under the Legal Office ground rules.
d. Follow the procedures for public announcements by NASA found in agreements with other agencies or contractors when releasing mishap information.
e. Coordinate information releases as described in the NPG 8621. Draft 1 "NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping", Appendix A. (http://www.hq.nasa.gov/office/codeq/8621d1ax.pdf)

Contractors

a. Contractors are responsible for reporting to the Contracting Officer of the occurrence of any mishap within 1 working day, including a close call that occurs during operations on the Center.
b. Contractors are responsible for investigating the accident, as directed by the Contracting Officer, and reporting the results of the investigation to the Contracting Officer.
c. Responsible for submitting to the Chief, GSO and the contracting officer mishap statistical reports as required in the contract statement of work or contract specification.

Contracting Officers and Their Technical Representatives

a. Must ensure that GRC contractors understand and follow NASA and GRC contract requirements for reporting and investigating close calls and mishaps.
b. Immediately notify the Chief, GSO of all mishaps, incidents, or close calls involving contractors under his/her authority.
c. Provide the contractor with a NF1627 and ensure that it is properly completed and returned in a timely manner.
d. Return the completed NF1627 to the GSO in a timely manner.
e. Provide for the contractors, as needed, training in proper investigative techniques and in procedures for completing NF1627.
f. Initiate corrective actions required abating any hazardous conditions or actions. Using the EH&S Help Line at 3-8848 and/or any other methods available to the Contracting Officer.
g. Assist in a mishap investigation as required by the GSO, or any board or committee assembled to investigate the mishap or incident.
h. Responsible for establishing frequency and due dates for the statistical report. The Contracting Officer may use their own format for this report, but as a minimum, will include the number of employees working on the contract, the number of actual hours worked, totals of lost time and no-lost time cases, frequency rates,

and totals of all other mishaps by type, including close calls. Additional information on reporting work-related injuries and illnesses can be found in 29 CFR 1904.8 "Recording and Reporting Occupational Injuries and Illnesses," published by the U.S. Department of Labor, Bureau of Labor Statistics. (http://www.osha-slc.gov/OshStd_data/1904_0008.html)

i. Provide follow-up data such as total time lost from work, end of restricted duty, or final costs to the GSO.

21.8 REPORTING INJURIES/ILLNESSES AND CLOSE CALLS

Initial Response if a Mishap Occurs

a. The first priority is to get help. This should be accomplished immediately, even before initial rescue actions are attempted. Employees must call 911 from the nearest NASA phone, if necessary, wait for properly trained and equipped rescue personnel. When a mishap occurs creating an emergency situation, the person or persons observing the event should call 911 or the Security Dispatcher at (216) 433-2088. Emergencies include:

    - Mishaps that cause major injuries to one or more persons, or major property damage.
    - Mishaps that result in a condition that is immediately dangerous to life or health.
    - Any unplanned or uncontrolled hazardous material spills.
    - Any unplanned fire or explosion.
    - Mishaps that require prompt emergency response.

b. Prevent further injury or damage.
c. Secure the mishap scene.
d. Safeguard mishap evidence.
e. Report the mishap to the Chief, GSO immediately.
f. Complete a NF1627A and submit to the Chief, GSO within 24 hours.

Reporting a Close Call

A Close Call is an event that could have caused injury or property damage, but didn't. Report a close call within 8 hours after it happens by following these steps:

a. Report the close call to the Chief, GSO.
b. Complete a NF1627A and submit to the Chief, GSO within 24 hours.
c. Transfer the information from the NF1627A onto a NF1627. Make sure you include the corrective actions and proper signatures. This form must be submitted to the Administrator, GSO within 10 working days. If you need an extension, you must call the Chief, GSO for approval.

d. The Administrator, GSO will check for errors or omissions and will return it to the submitter for further information if needed.
e. If the Chief, GSO agrees with the corrective actions, he will close out the report.

Reporting a Injury/Illness

Each NASA and contractor employee on NASA property, or custodian of NASA assets elsewhere, is responsible for reporting mishaps. Notification of a mishap will be made immediately to a supervisor, safety, or health staff member.

a. Mishaps reported from other than OMS:

- Report the injury/illness to the Chief, GSO.
- Submit a NF1627A to the Chief, GSO within 24 hours. The Responsible Organization's supervisor or higher authority should complete the forms.
- Transfer the information from the NF1627A onto a NF1627. The completed NF1627, including corrective actions, needs to be submitted to the Administrator, GSO within 10 working days. If you need an extension, call the Chief, GSO for approval.
- Have your facility manager concur on the corrective action if the mishap involved the building or hazardous materials.
- Have your director, program manager, or contract project manager sign the form.
- Send the completed form to the Administrator, GSO.

b. Mishaps reported by OMS:

- Report injury/illness to your supervisor immediately.
- Employee goes to OMS to be evaluated for injury/illness.
- OMS fills out a NF1627B when an employee has an injury or illness on the job. Submit NF1627B to the Administrator, GSO. A copy of the form will be given to the employee. The employee is responsible for giving the form to his/her own supervisor/company.
- Administrator, GSO receives email notification from OMS that an injury/illness occurred and the NF1627B has been submitted. The NF1627B is reviewed to determine if the case is recordable or non-recordable. If the case is recordable, a NF1627 will be submitted to the supervisor. If the case is not recordable, it will go to the Chief, GSO for signature and corrective actions.
- The supervisor will transfer the data from the NF1627B onto a NF1627.
- Have your facility manager concur on the corrective action if the mishap involved the building or hazardous materials.
- Have your director, program manager, or contract project manager sign the form.
- Send the completed form to the Chief, GSO. If the corrective action is acceptable, he will close the report.

Submitting a Mishap Report using the 1627 Online Forms

There are three online 1627 forms. These forms were designed to be compatible with IRIS and are user friendly for the person who is submitting the report.

"NASA Medical Safety Incident Report" (NASA Form [NF] 1627B)

This form was developed to collect safety related information about the injured/ill person from an individual who knows the details about the injured/ill person. This is form is filled out by Occupational Medicine Services personnel only. (See Figure B-1 for a sample of the form)

"NASA Initial Safety Incident Report" (NASA Form [NF] 1627A)

This is similar to the previously used Telephonic Mishap Report form. Its usage is the same, which is to collect a large amount of narrative information (See Figure C-1 for a sample of the form and Figure C-2 for instructions.)

"NASA Mishap Report" (NASA Form [NF] 1627)

This is the full form. It contains everything on the 1627A and 1627B forms plus other information that is not readily available within a few hours of the incident. (See Figure D-1 for a sample of the form and Figure D-2 for instructions.)

The forms can be easily filled-in by individuals who report incidents. Since the forms were developed using MS Word, they will work equally as well on Macintosh computers that have MS Word as they will on IBM PC compatibles. The online forms can be printed from any computer or several blank copies can be made for future use. Online forms can be found at the Glenn Safety Home Page.

Submitting a Mishap Report using Hand/Typewritten 1627 Forms

The hand/typewritten forms are primarily for individuals who report incidents but do not have access to MS Word. The 1627 forms can be filled-in by hand or typewritten. The NF1627 is a carbon copy form with a white, yellow and blue sheet. The unshaded areas on the white sheet constitute the Initial Report, which must be submitted to the GSO, Chief within 24 hours of the mishap. The remaining area on the yellow sheet constitute the Follow-up Report, which must be submitted to the GSO, Administrator at the completion of the investigation but no later than 10 working days after the mishap. The 10-day period does not apply to any mishap requiring a Board of Investigation. In those cases the NF1627 will be completed when the Board report is finalized. The blue (File) copy should be retained by the reporting organization.

21.9 RECORDKEEPING PROCEDURES

The purpose of Recordkeeping-29 CFR Part 1904.1, is for the employer to be aware of injury, illness, and accident rates and the conditions surrounding him/her at his/her facility.

Two Primary Recordkeeping Forms are the OSHA 200 Log-Summary of Occupational Injuries and Illness, and the OSHA 101 Form-Supplementary Record of Occupational Injuries and Illness.

OSHA Form 200 Log

a. Provides general information
b. Documents the who, where, when and what
c. Is the only OSHA document that is posted (in February)
d. Substitute documents are **not** normally used

At GRC GSO maintains the OSHA 200 Log for all Civil Servants and the Insurance Office maintains the records of the Form CA-1 "Federal Employee's Notice of Traumatic Injury and Claim for continuation of Pay/Compensation" for all Civil Servants. The CA-1 form can be used in lieu of the OSHA 101 Form.

Location of Records

The OSHA 200 Log can be found in GSO Building 6, Room 148. The logs will be maintained for five years plus the current year.

Contractor Injuries

a. Employers are only responsible for their employees.
b. Must keep their own records for their employees.

21.10 RECORDABLE OR NOT RECORDABLE VS. RECORDABILITY OF AN INCIDENT

How to Determine if a Incident is Recordable.

OSHA Comment-"Recording an injury or illness under the OSHA system does not necessarily imply that management was at fault, that the worker was at fault, that a violation of an OSHA standard has occurred, or that the injury or illness is compensable under workers' compensation or other systems."

As required by 29 CFR 1904.2 and the definitions therein, only those mishaps involving death injury/illness to NASA civil service employees are recordable on the OSHA 200 log. Only cumulative data of recordable mishap are communicated to OSHA's Office of Federal Agency Programs (OFAP) in the annual Agency report.

Take the following steps to determine if a case is recordable:

a. Step 1 - "Has a Case Occurred"

    - Has there been an occupationally related death, injury or illness?

b. Step 2 - "Establish Work Relationship" (one of the following must apply)

    - On employer's premise?
    - At other locations where employees are engaged in work activities

c. Step 3 "Injuries or Illnesses"

    - Injury-Instantaneous event that has been determined to be work related.
    - Illness-Results from anything other than an instantaneous event

        - Classify a incident as an injury or illness-not both.
        - Identify the cause, not the resulting injury.

d. Step 4-Record Occupational Illnesses

    - Have an illness diagnosed before you record it.
    - Any person trained and experienced can make determination.
    - Record each illness in one of seven categories on log:

        - Occupational skin diseases or disorders.
        - Dust diseases of the lungs
        - Respiratory conditions due to toxic agents
        - Poisoning (systemic effect of toxic materials)
        - Disorders due to physical agents
        - Disorders associated with repeated trauma
        - All Other occupational illnesses

e. Step 5 "Are Work-Related Injuries Recordable"

    - Record all work-related deaths and illnesses

- Record specific cases of non-fatal injuries when:

    - Medical treatment beyond first aid is given.
    - Loss of Consciousness
    - Restriction of work or motion
    - Transfer to another job.

Exclusions

NASA reportable injuries and hardware-related mishaps that are generally excluded are as follows:

a. Injuries in restrooms, hallways, and cafeterias are normally considered when on employer's premises.
b. Injuries on parking facilities are generally not considered part of the employer's premises.
c. Injuries on company athletic facilities are not work-related unless employees are required to participate (voluntary vs. mandatory).
d. Restricted duty case where an employee does not lose any workdays but is assigned "light duty is not considered a NASA lost time case. Also, part of a workday lost for medical treatment or therapy does not count as lost time.
e. Injuries associated with non-occupational diseases where the disease itself, not the injury, is the proximate cause of the lost time.
f. Injuries resulting from non-work related, pre-existing musculoskeletal disorders or by minimum stress and strain (example: simple, natural, nonviolent body positions or actions). These injuries/illnesses are unrelated to mishap-producing agents or environments in daily work.
g. Injuries occurring during official travel that result from personal, non-NASA sponsored recreational activities (e.g., skiing or tennis mishaps).
h. Malfunction or failure of component parts that are normally subject to fair wear and tear and have a fixed useful life that is less than the complete system or unit of equipment is not considered a mishap, provided that:

    - Malfunction or failure is the only damage.
    - Sole action is to replace or repair that component part. Does not apply to a malfunction or failure of a component part that results in damage to another component.
    - Damage to equipment/property was anticipated as a potential result of authorized testing.
    - Property damage as a result of vandalism, riots, civil disorders, or felonious acts such as arson or sabotage.
    - Losses of Remotely Piloted Vehicles (RPV) that have been accepted by the program as possible loss potentials are not required to be reported as a mishap.

21.11 RESULTS OF RECORDABLE INJURIES

Medical Treatment

a. Injuries that impair bodily function (i.e., normal use of senses, limbs, etc.)
b. Injuries that result in damage to the physical structure of a non-superficial nature (e.g., fractures).
c. Injuries that involve complications requiring follow-up medical treatment

Loss of Consciousness

a. Always recordable, if work-related
b. This condition is generally associated with more serious injuries.

Restriction of Work of Motion

a. When employee is physically or mentally unable to perform normal work activities after an injury
b. All or any part of the workday of shift
c. Applies to either a lost work time injury or non-lost work time injury.

Transfer to Another Job

a. Record because it is serious enough regardless of the type of treatment
b. Seldom the sole criteria for determining recordability (i.e., medical treatment or restriction of work or motion.

21.12 FIRST AID TREATMENT

First Aid (Not Recordable)

a. One-time treatment and subsequent observation.
b. Treatment of only minor injuries, not emergency treatment of serious injuries.

Recordability - Three categories of recordable cases

a. Fatalities
b. Injuries and Illnesses with lost workdays away from work.
c. Injuries and Illnesses without lost workdays away from work.

Record all Lost Workday Cases

a. Injured or sick days away from work.

b. Inability to work because of injury of illness.
c. Employee-restricted work activity.
d. Assigned to another job.
e. Work less that full time in regular job.
f. Cannot fulfill all his/her normal job functions.

21.13 MISHAP INVESTIGATION

Purposes of Mishap Investigations

The primary purpose of a mishap investigation and subsequent pursuit of corrective action is to prevent similar occurrences and thus improve the safety of NASA operations. The emphasis for a mishap investigation should be on discovering root cause-effect relationships from which remedial and corrective actions can be derived. The intent is not to place blame but to determine how processes and responsibilities may be clarified and improved and errors eliminated. Additional purposes for investigations are to determine the nature and extent of the event and its programmatic impact; to assist in the improvement of policies, standards, and regulations; to satisfy the public's "right to know," and to dispel any mystery associated with the occurrence.

Investigating Close Calls or Mishaps

The investigation should be started as soon as the emergency is brought under control. The Glenn Safety Office may be a good source for help. A Safety Specialist, GSO may already be on the way to the scene. GRC's Center Director may appoint a MIB to investigate your mishap. If he or she appoints a board, stop the investigation, keep the mishap scene and evidence secure, and cooperate with the board. If you think a MIB should investigate the incident, contact the GSO.

If investigating close calls or mishap, perform the following:

a. Identify the potential witnesses and get statements from them.
b. Secure the mishap scene and protect it from being disturbed.
c. Safeguard evidence such as samples and photographs.
d. Secure all records such a checklists, videos, and electronic data.
e. Refer any news media personnel who ask you about the mishap to the Community and Media Relations Office.
f. Consult any experts you need to sample the mishap scene or analyze the data.
g. Interview witnesses. You must keep witness statements confidential.
h. Examine all evidence and analyze all mishap data to determine the primary cause and contributing causes of the mishap. Don't stop until the root cause is determined. For example:

- The primary cause may be that the employee didn't follow procedures.

- The root cause could be that there were no procedures or that management didn't train the employee on the procedure.

i. Decide what action will be taken to correct the root causes and prevent recurrence. Make sure the elected corrective action will eliminate the root causes or reduce their effects. Make sure lessons learned are documented.
j. Document the corrective action activities on the NASA Form 1627 or on a separate report and attach to the form. Remember to turn in work requests if necessary.

What to do with Close Call or Mishap Information.

As a supervisor or facility manager, close call and mishap investigation reports and lessons learned packages must be reviewed.

To find close call or mishap trends in your work areas such as:

a. Is the number of close calls or mishaps in the affected areas increasing or decreasing?
b. Have any of the affected areas had repetitive types of mishaps? Take action on mishap reports or lessons learned that would improve the affected area.

Mishap Investigation Board

Upon notification of a Type A or B mishap, mission failure, or any other mishap or close call that will be investigated at the Type A or B level, the appropriate appointing official will initiate communications with the appropriate personnel to discuss board member appointments and the course of action to follow. (See Appendix A, "Schedule for Mishap Reporting, Investigating, Follow-up, Closeout for Type A and B Boards".)

NASA Headquarters appoints mishap investigation boards for Type A mishaps. GRC's Center Director must appoint mishap investigation boards for Type B mishaps, and mission failures with concurrence from the Associate Administrator for Safety and Mission Assurance. He or she may appoint a board for less serious mishaps or close calls if the mishap had the potential to have been a Type A or B.

The Glenn Research Center, Center Director must appoint board members as soon as possible, but no later than 72 hours after he or she is notified of the mishap. The Center Director or his/her representative must discuss board member appointments and the course of action to pursue with the following individuals:

a. Appropriate Program or Institutional Associate Administrator.
b. Director of Field Installation where mishap occurred.
c. Associate Administrator for NASA Safety and Risk Management Division (Code QS).

d. Director, Glenn Safety Office
e. General Counsel
f. Associate Administrator for Communications.
g. Director(s) of Field Installation(s) from which potential board members may be drawn
h. Director, Occupational Medicine Services, for cases having medical or environmental health implications. A flight surgeon will be included for mishaps involving potential of crew injury of the use of crew egress equipment.
i. Director, NASA Glenn Aeronautics Directorate, for cases involving NASA aircraft.
j. Assistant Associate Administrator for Facilities Management for cases involving facility construction mishaps or having construction of facilities implications.
k. Director, International Relations Division, if the mishap occurred outside the United States.

Mishap Investigation Board Members

Mishap investigation board members must meet the following requirements:
(Refer to NPG 8621. Draft 1 "NASA Procedures and Guidelines for Mishap reporting, Investigating, and Recordkeeping", Chapter 3.)
http://www.hq.nasa.gov/office/codeq/8621d1ax.pdf for more information)

a. The chairperson and other members of investigation boards are to be unbiased third parties, not directly connected with the operation in which the mishap occurred.
b. The board chairperson and board members must be federal employees unless federal regulations say otherwise. The board chairperson may exclude non-federal employees from any deliberations unless they are appointed board members. If the board chairperson thinks any member will affect the integrity of the board, he or she must bring that concern immediately to the attention of the appointing official.
c. To the extent possible, board members will be selected from personnel who have completed the NASA Mishap Investigation Course, or the equivalent.
d. A mishap investigation board that investigates a mishap involving chemical processes must include personnel who are familiar with the process under investigation. In this case, one or more persons from the work area where the mishap occurred may be board members.
e. An expert in human factors will be included if human factors are thought to be substantially involved.
f. Occupational Health personnel will be included on boards investigating illness and health-related mishaps.
g. Local safety and legal personnel will be appointed only as advisor (nonvoting) to the board.
h. Mishaps involving NASA Contractors or contractor-owned equipment/property shall be investigated by the contractor in accordance with contractual requirements, i.e., NFS Clause 18-52.223.70, "Safety and Health," and 18-52.223-

73, "Safety and Health Plans," and any additional requirements developed by program or project officials and incorporated in the contract or grant instrument.

Conducting the Investigation

For general application and continuity of the investigative effort, the investigation is divided into phases, beginning with the preliminary examination and ending with the submission of the report of investigation. These phases are:

a. Phase 1 – Identifying and consolidating the evidence.

- The identification and consolidation of evidence (Phase1) comprises the consolidation of all information acquired and substantiated by notes, statements, records, telemetry data, voice recordings, diagrams, and photographs. As evidence and information are identified, they are assembled and consolidated into a form suitable for providing a basis for analysis.
- If, at any phase of the investigation, evidence of sabotage is detected, the Security Management Office, Chief or the nearest NASA Security Officer should be informed. If evidence of criminal negligence or other violation of law arises, the nearest NASA Office of Inspector General should be advised.

b. Phase 2 – Analyzing the data.

- Careful and complete analysis of the data (Phase 2) compiled during previous investigative activities is required to arrive at the causes of a mishap. This analysis should fully utilize the combined experience and knowledge of the Board members and specialists to establish the causes and contributing factors of the mishap, or to arrive at possible causes and contributing factors. The results of the analysis form a basis for reaching conclusions and making recommendations, which can be effective in future efforts to prevent accidents and to enhance mission success.

c. Phase 3 – Reaching conclusion

- The conclusion (Phase 3) reached by the Board reflects the results of the analysis and evaluation. Each conclusion or finding should be based on facts established during the investigation.

d. Phase 4 – Establishing recommendations for preventive action.

- The establishment of valid recommendations for action to factualness of the prevent recurrence of accidents. Phase 4 is only as effective as the evidence and diligence of the analysis, and conclusions.

e. Phase 5 – Preparing and submitting the investigation report to the appointing authority for action.

- The preparation and submittal of the investigation report (Phase 5) includes, as the primary objective, a draft report to enhance communication of the Board's findings to management and other agencies so that preventative action can be taken.
- During the investigation, the chairperson will provide an interim report to the appointing official as requested, but generally on a 2-week schedule. The interim reports should briefly describe the activities accomplished and planned by the board and provide a schedule of estimated completion dates.

Release of Mishap Reports and Information

In accordance with NASA policy, witness statements given in the course of a NASA mishap investigation are considered as protected and privileged information, and therefore are non-releasable to the public or news media. NASA may also elect not to release other information in a NASA mishap investigation report depending on such factors as whether the information is classified or involves privacy considerations. Mishap Board members and interviewees should be made aware that the ultimate decision for the release of statements or information in a NASA mishap investigation report might reside in a court or administrative body outside of NASA's jurisdiction and control.

NASA Occupational Medical Services medical reports and witness statements are not to be physically included in a Mishap Report, but should be retained in a confidential/privileged file so that inadvertent release is more effectively controlled.

Public release of mishap information and mishap investigation reports is the responsibility of the Glenn Community and Media Relations Office. No information is to be released to the news media or the public from any other GRC source.

Investigation Board Report

The findings of each mishap investigation, whether by a board, a committee, or an investigating official, must be documented in a report.

a. Type A and B mishap reports require review by the Executive Safety Board (ESB) and Headquarters Code QS and Type B reports require review by the ESB and the Center Director prior to being released for distribution.
b. Type C incident and close call reports require review by the Chief, GSO before being released.
c. Test failures require review by the cognizant division chief prior to being released. After the investigation has been completed and the appropriate authority

has reviewed the report, the original report and all investigative findings and materials shall be released to the Chief, GSO for permanent record storage.

The following apply to investigation board reports for both Type A or Type B mishaps, mission failures, and any other mishaps investigated at the Type A or Type B level.

a. Title of Report will include the nature of the mishap and date of occurrence.
b. Contents

- Volume I: The body of the report
- Volume II: Appendices
- Volume III: Proposed Corrective Action Plan
- Volume IV: Lessons Learned Summary
- Volume V: Witness Statements and Testimony, Recordings and Transcripts.

The purpose of the board report, the proposed Corrective Action Plan, and the Lessons Learned Summary is to:

a. Document the facts associated with the mishap.
b. Determine and identify the primary, contributing, and potential causes.
c. Recommend corrective action to prevent recurrence of the specific mishap.
d. Share lessons learned to prevent recurrence of similar mishaps.

Schedule

The board report (all volumes) is due to the appointing official for review and approval within 60 days of the mishap. The board must not date the report; the date should reflect final acceptance by the Approving Authority for the Safety and Risk Management Division.

Within 20 days, appointing official accepts/rejects report. Develops a formal Corrective Action Implementation Plan. Forward 15 copies of the undated report, the Corrective Action Implementation Plan, and the Lessons Learned Reports to the Director of the Safety and Risk Management Division at NASA Headquarters. (Volume V must be forwarded under a separate cover and may not be reproduced.)

In unusual circumstances the appointing official may grant additional time to complete the report, if requested in writing. In such cases, the report shall be forwarded to the Director of the Safety and Risk Management Division at NASA Headquarters within 15 days after receipt by the appointing official.

Follow-up Activities

a. The Appointing Official will carry out the Corrective Action Implementation Plan activities.
b. The GSO will track the status of the Corrective Action Implementation Plan.
c. The Appointing Official will report status of the Corrective Action Implementation Plan quarterly (fiscal year) to the Director, NASA Safety and Risk Management Division. When all actions have been implemented, the appointing official will so certify in writing to the Director, NASA Safety and Risk Management Division, who will then close the mishap file.

Incident Reporting Information System (IRIS) Suite

The Incident Reporting Information System Suite is a safety reporting system developed for NASA from the requirements identified by the safety organizations throughout the agency. It is called a "Suite" because it contains a package of tools—the application itself, on-line incident reporting forms and AdHoc querying and reporting module. IRIS has built-in compatibility with MS Office products for producing AdHoc graph and chart reports.

Each NASA Field Installation Safety Office shall maintain its own IRIS database. The database provides information about all mishaps, mission failures, and close calls; with the exception of damage to contractor-owned equipment and property, off-site contractor injuries, and construction contractor injuries; will be entered into this database.

Lessons Learned

Both government and industry have long recognized the need to document and apply the knowledge gained from past experience to current and future projects in order to avoid the repetition of past failures and mishaps. Through the Lessons Learned Information System (LLIS), NASA seeks to facilitate the early incorporation of safety, reliability, maintainability, and quality attributes into the design of flight and ground support hardware, software, facilities, and procedures.

After the investigation is finalized, decide any lessons learned could be shared with other organizations that would prevent them from having a similar mishap. Lessons learned must be attached to the final mishap or close call report, if applicable. For more information or assistance with the Lessons Learned Information System contact the NASA GRC representative James Cery or you can go the Lessons Learned home page at http://llis.nasa.gov/llis/llis.html.

Emergency Notification and Response Procedure

The initial response by personnel in the area when a mishap occurs is very critical. The first priority is to get help. This should be accomplished immediately, even before initial rescue actions are attempted. Employees must call someone first and, if necessary, wait for properly trained and equipped rescue personnel.

When a mishap occurs creating an emergency situation, the person or persons observing the event should use NASA phones to call 911 or pull the nearest manual fire alarm box. The current Emergency Preparedness Plan

21.14 REFERENCES

- NPD 8621.1G, "NASA Mishap Reporting and Investigating Policy."
- NPG 8715.Draft 2, "NASA Safety Manual Procedures and Guidelines."
- NPG 8621.Draft 1, "NASA Procedures and Guidelines for Mishap Reporting, Investigating and Recordkeeping."
- Incident Reporting Information System (IRIS), NASA Form (NF) NF-1627, "Full Safety Incident Report," NF-1627A, "Initial Safety Incident Report," NF-1627B, "Initial Medical Safety Incident Report."
- NASA Lessons Learned Information System (LLIS) at web address - http://llis.nasa.gov/llis/llis.html.
- 29 CFR 1904.8, "Recordkeeping and Reporting Occupational Injuries and Illnesses," published by the U.S. Department of Labor, Bureau of Labor Statistics.
- Johnson, William G., "MORT Safety Assurance Systems," Marcel Dekker, Inc., 1980.
- Ferry, Ted S.; "Modern Accident Investigation and Analysis," John Wiley and Sons; New York; 1988.

APPENDIX A

TIME	ACTION	RESPONSIBLE PARTY
M	Mishap Occurs	
M + ASAP	Notify Safety and Risk Management Division (QS)	Appropriate Installation Safety Official
	Notify HQ Offices	Code QS
	Initiate Conference for Board Appointment	Appointing Official
M + 1 Day	Submit "Initial Safety Incident Report" (1627A) to the GSO, Chief	Reporting Organization
M + 1 to 2 Days	Enter data into IRIS	GSO, Administrator
	Send Board Appointment Letters	Appointing Official

M + 3 Days	Board Convenes	Board Chairperson
M + 3 to 5 Days	Send Interim (2 wk) status reports to Appointing Official. (Director, Code QS for Type A only)	Board Chairperson
M + 60 Days	Send updated Board Report (All Volumes) to Appointing Official	Board Chairperson
M + 20 Days	Accept/Reject Report	Appointing Official
	Develop formal Corrective Action Implementation Plan	Appointing Official
	Forward 15 copies of report and Corrective Action Plan to Director, Code QS	Appointing Official
M + 95 Days	Distribute report and plan to HQ offices.	Director, Code QS
	Disposition all comments	Director, Code QS
M + 105 Days	Concur and Date report	AA for SMA
M + 145 Days	Dismiss Board, publish and distribute report	Appointing Official
M + 160 Days	File follow-up 1627 with GSO	Reporting Organization
	Enter appropriate final mishap information into IRIS.	GSO, Administrator
M + 105 Days + 3 Months	Submit Quarterly Report on status of Corrective Action Plan to Director, Code QS	Appointing Official
M + 105 Days + 6 Months	Submit Quarterly Report on status of Corrective Action Plan to Director, Code QS	Appointing Official
	Submit Quarterly Reports until all actions have been implemented.	

Schedule for Mishap Reporting Investigating, Follow-up, and Closeout for Type A and Type B Boards.

APPENDIX B

NASA FORM 1627B PREVIOUS EDITIONS ARE OBSOLETE

SAMPLE

Figure B-1 "NASA Medical Safety Incident Report" NF1627B

APPENDIX C

NASA FORM 1627A PREVIOUS EDITIONS ARE OBSOLETE

SAMPLE

Figure C-1 "NASA Initial Safety Incident Report" NF1627A (Online Form)

Instructions for NF1627A

FIELD	DESCRIPTION
	DETAILS
1. Date of Incident	This field will accept valid dates entered in many different formats however, after entry, the field will display the date in MM/DD/YYYY format. After this date is entered, the Fiscal Year field will be adjusted to match the fiscal year for this date.
2. Time of Incident	This field will accept valid times entered in many different formats however, after entry, the field will display the time in HH:MM format. To enter "7:30 PM" type "7:30 PM" or "19:30". The colon is required for the field to accept the date.
3. General Location	The general location of where the incident occurred. (e.g., building, area, facility, etc.)
4. Exact Location	The exact location is any other descriptive information the user can provide which also relates to the general location (e.g., room number, floor, street, etc.)

5. Responsible Organization	The civil service or contractor organization that is most responsible for the occurrence of the incident. If currently unknown, enter "TBD" (to be determined) as the organization.
6. CONTRACT NUMBER	The contract number of the responsible organization, if applicable.
7. ORG. FILE NUMBER	The file number that the responsible organization assigned to the case. This field is not required.
8. ORGANIZATION POINT OF CONTACT	Enter the point of contact name for the responsible organization.
9. MAIL CODE	Enter the mail code for the responsible organization.
10. PHONE	Enter the phone number for the responsible organization.
11. MISSION AFFECTED, if known	The name, number or other signifying value that identifies the mission, program, or project affected by this incident. This field is not required but is recommend if known.
12. PROGRAM IMPACT, if known	The impact to the mission, program or project in terms of schedule delays, cost adjustments, etc. This field is not required but is recommend if known.
13. INCIDENT DESCRIPTION	Use this field to enter as much narrative detail as necessary to fully describe the incident. If known, include in the description of damage and/or injury/illness, conditions that led to the incident, the cause, objects/substances involved, unsafe acts in progress, etc. Note: do not use in this field for actual names of injured/ill persons or persons alleged to have caused the incident.
	IMPACT SUMMARY
14. Check all out comes from this event that are known facts	
Fatality	The case involves one or more fatalities.
Permanent Disability	The case involves one or more persons who were permanently disabled as a direct result of the incident.
3 or more people hospitalized	The case involves 3 or more persons hospitalized for more than observation as a direct result of the incident.
Under 3 people hospitalized	The case involves 1 or 2 persons hospitalized for more than observation as a direct result of the incident.

Figure C-2 "NASA Initial Safety Incident Report" NF1627A (Online Form)

Instructions for NF1627A (continued)

FIELD	DESCRIPTION
Loss of Consciousness	The case involves 1 or more persons who loose consciousness as a direct result of the incident.
Injury or Illness	The case involves 1 or more persons who were injured or became ill as a direct result of the incident.
Serious Damage to Aircraft or Space Hardware	Any serious damage to an aircraft or space hardware.
Serious Damage to Flight or Ground Support Hardware	Any serious damage to flight or ground support hardware.
Unexpected Damage Due to Test Failure	Any serious unexpected damage resulting from a failed test.
Damage Estimate Over $1,000,000	Any damage that the submitter believes may result in a repair/replacement cost of over $1,000,000.
Damage Estimate Between $250k and $1M	Any damage that the submitter believes may result in a repair/replacement cost of between $250,000 and $1,000,000 inclusively.
Damage Estimate Between $25k and $250k	Any damage that the submitter believes may result in a repair/replacement cost of between $25,000 and $250,000 inclusively.
Damage Estimate Between $1k and $25k	Any damage that the submitter believes may result in a repair/replacement cost of between $1,000 and $25,000 inclusively.
Damage Estimate Under $1,000	Any damage that the submitter believes may result in a repair/replacement cost of not more than $1,000.
Affected Primary Objective(s) of Mission	Any incident that the submitter believes had a significant negative affect on the primary objective(s) of a NASA mission, program or project.
Significant Program Impact	Any incident that the submitter believes had a significant negative impact in terms of cost, schedule delays, etc. on a NASA mission, program or project.
High Visibility (internal or external to NASA)	Any incident that the submitter believes will lead to a highly publicized incident internal or external to NASA.
Close Call	Any incident that did not contain any injury/illness, property damage of more than $1,000, or loss of productivity but could have led to one or more of these.
	NASA SAFETY OFFICE USE ONLY - INVESTIGATION
15-16.	Filled out by the Glenn Safety Office.

	SUBMITTER
17. Submitted By	Enter the User Name of the person who entered the case.
18. Organization	Enter the Organization Code of the person who entered the case.
19. Mail Code	Enter the Mail Code of the person who entered the case.
20. Phone	Enter the Phone Number of the person who entered the case.
21. Date	Enter the current date.
22. TIME	Enter the current time (in 24-hour clock format).

Figure C-2 "NASA Initial Safety Incident Report" NF1627A (Online Form)

APPENDIX D

SAMPLES

NASA FORM 1627 PREVIOUS EDITIONS ARE OBSOLETE

Figure D-1 "NASA Mishap Report" NF1627 PART A (Online Form)

Figure D-1 "NASA Mishap Report" NF1627 PART B (Online Form)

Instructions for NF1627 Online Form

FIELD	**DESCRIPTION**
Master File No.	The Glenn Safety Office will assign this field.
	DETAILS
1. Date of Incident	This field will accept valid dates entered in many different formats however, after entry, the field will display the date in MM/DD/YYYY format. After this date is entered, the Fiscal Year field will be adjusted to match the fiscal year for this date.
2. Time of Incident	This field will accept valid times entered in many different formats however, after entry, the field will display the time in HH:MM format. To enter "7:30 PM" type

	"7:30 PM" or "19:30". The colon is required for the field to accept the date.
3. General Location	This field usually contains large, well-known areas of a site (e.g., area number, building, facility, etc.)
4. Exact Location	The exact location is any other descriptive information the user can provide which also relates to the general location (e.g., room number, floor, street, etc.)
5. Responsible Organization	The civil service or contractor organization that is most responsible for the occurrence of the incident. If currently unknown, enter "TBD" (to be determined) as the organization.
6. Contract Number	The contract number of the Responsible Organization, if applicable.
7. Org. File Number	The file number that the Responsible Organization assigned to the case. This field is not required.
8. Organization Point of Contact	Enter the POC name for the Responsible Organization.
9. Mail Code	Enter the Mail Code for the Responsible Organization's POC.
10. Phone	Enter the Phone Number for the Responsible Organization's POC.
11. Mission Affected	The name, number or other signifying value that identifies the mission, program, or project affected by this incident. This field is not required but is recommend if known.
12. Program Impact	The impact to the mission, program or project in terms of schedule delays, cost adjustments, etc. This field is not required but is recommend if known.
13. Incident Description	
	IMPACT SUMMARY
14. Check all outcomes from this event that are known facts.	
Fatality	The case involves one or more fatalities.
Permanent Disability	The case involves one or more persons who permanently disabled as a direct result of the incident.
3 or More People Hospitalized	The case involves 3 or more persons hospitalized for more than observation as a direct result of the incident.
1 or 2 People Hospitalized	The case involves 1 or 2 persons hospitalized for more than observation as a direct result of the incident.
Loss of Consciousness	The case involves 1 or more persons who loss consciousness as a direct result of the incident.

Full Lost Workday(s)	The case involves 1 or more persons who were placed on medical leave for 1 or more full workdays because of their injury or illness.
Restricted Workday(s)	The case involves 1 or more persons who were placed on restricted or lighter than normal duty because of their injury or illness.
Medication or Medical Treatment Administered	The case involves 1 or more persons who were provided medical treatment or medication as a result of the incident. NOTE: The treatment must be considered OSHA reportable treatment.
Injury or Illness	The case involves 1 or more persons who were injured or became ill as a direct result of the incident.

Instructions for NF1627 Online Form (Continued)

First Aid Only was Administered	The case involves 1 or more persons who were provided medical treatment or medication as a result of the incident but the treatment or medication is not considered OSHA reportable.
Serious Damage to Aircraft or Space Hardware	Any serious damage to an aircraft or space hardware.
Serious Damage to Flight or Ground Support Hardware	Any serious damage to flight or ground support hardware.
Unexpected Damage Due to Test Failure	Any serious unexpected damage resulting from a failed test.
Damage Estimate Over $1,000,000	Any damage that the submitter believes may result in a repair/replacement cost of over $1,000,000.
Damage Estimate Between $250k and $1M	Any damage that the submitter believes may result in a repair/replacement cost of between $250,000 and $1,000,000 inclusively.
Damage Estimate Between $25k and $250k	Any damage that the submitter believes may result in a repair/replacement cost of between $25,000 and $250,000 inclusively.
Damage Estimate Between $1k and $25k	Any damage that the submitter believes may result in a repair/replacement cost of between $1,000 and $25,000 inclusively.
Damage Estimate Under $1,000	Any damage that the submitter believes may result in a repair/replacement cost of not more than $1,000.
Affected Primary Objective(s) of Mission	Any incident that the submitter believes had a significant negative affect on the primary objective(s) of a NASA mission, program or project.
Significant Program Impact	Any incident that the submitter believes had a significant negative impact in terms of cost, schedule delays, etc. on a NASA mission, program or project.
High Visibility (internal or external to NASA)	Any incident that the submitter believes will lead to a highly publicized incident internal or external to NASA.

Close Call	Any incident that did not contain any injury/illness, property damage of more than $1,000, or loss of productivity but could have led to one or more of these.
15. Level of Potential for this event of close call	Enter a code from impact summary (Item #14) to reflect the potential impact of the actual mishap or close call under differing conditions.
	PERSON INVOLVED IN INJURY OR ILLNESS
16. Name	Required field. The name of injured or ill person.
17. Organization	Required field. The organization to which the injured/ill person belongs. Select from the limited list of values.
18. Contract Number	The contract number of injured/ill person's organization, if applicable.
19. Job Tile/Occupation	Require field. The job title or occupation of the injured/ill person.
20. Supervisor's Name	Required field. The supervisor's name of injured/ill person's.
21. Supervisor's Organization	Required field. The organization of supervisor. Select from the limited list of values.
22. Supervisor's Mail Code	The mail code of supervisor.
23. Supervisor's Phone	Required field. The phone number of supervisor.
24. Phone	The age of the affected person.
25. Sex	Required field. The sex of the affected person.
26. Shift Worked	The shift on which the affected person was working. Choose 1st, 2nd or 3rd.
27. Continuous Duty Hours	The number of continuous hours worked by the affected person before the incident occurred.
28. Years of Experience	Number of years of experience the affected person has on the current job or equipment.
29. Injury of Illness	Required field. This information will come from the NF1627B Form.
30. From Pr-Existing	Select "Yes" if the injury or illness was from a pre-existing condition that was accelerated, re-injured or re-infected as a result of this case.

Instructions for NF1627 (Continued)

FIELD	**DESCRIPTION**
31. Fatality	Put a check in this box if this person died.

32. Date of Death	Required if the fatality checkbox is checked. Enter the date the person died.
33. Permanent Disability	Check if this person was permanently disabled as a result of the incident.
34. # Of Full Lost Workdays	Enter all full workdays the person will be away from work. This should include any doctor prescribed days and any days taken thereafter.
35. # Of Restricted Workdays	Enter all days that the affected person is placed on lighter than normal duty or has any restriction in work or motion.
36. Injury or Illness	Required field. See Appendix D-3 for selections.
37. Affected Body Part(s) or Body System(s)	Required field. See Appendix D-3 Page for selections.
38. Brief Medical Diagnosis	Required field. Information will come from NF1627B Medical Report.
39. Medical Treatment Administered	Required field. Information will come from NF1627B Medical Report.
40. Other Medical Treatment Administered	Required field. Information will come from NF1627B Medical Report
	EQUIPMENT/PROPERTY DAMAGED
41. Class of Equipment/Property Damaged	Check if applicable.
42. Estimated Cost of all Damaged Items	Check if applicable.
43. # Of Items Damaged	Check if applicable.
	SUBMITTER
44. Submitted By	Enter the user name of the person who entered the case.
45. Organization	Enter the organization code of the person who entered the case.
46. Mail Code	Enter the mail code of the person who entered the case.
47. Phone	Enter the phone number of the person who entered the case.
48. Date	Enter the current date
49. Time	Enter the current time (in 24-hour clock format).
	CAUSES
50-52	To be completed by NASA Safety Office.
	INITIAL CORRECTIVE ACTION

53. Initial Action	List planned corrective actions, responsible organizations and estimated completion dates.
54. Date Initiated	Enter date initiated of appropriate level of management in reporting organization.
55. Date Completed	Enter date completed of appropriate level of management in reporting organization.
56. Person Taking Action	Signature of appropriate level of management in reporting organization.
57. Organization	Enter organization code of appropriate level of management in reporting organization.
58. Mail Code	Enter mail code of appropriate level of management in reporting organization.
59. Phone	Enter phone number of appropriate level of management in reporting organization.
	PLANNED CORRECTIVE ACTION
60-87	To be completed by the Glenn Safety Office.

Codes for Online Form

"Injury Type Selections"

Abrasion	Avulsion	Amputation	Bites/Stings	Punctures
Burn (Chemical)	Burn (Thermal)	Concussion	Exposure	Contusion/Bruise
Dermatitis	Multiple Injuries	Electrical Shock	Exhaustion	Fracture
Hernia	Inhalation/Absorption/Ingestion	Internal Injuries	Laceration	Pain
Oxygen Deficiency	Shock/Trauma	Strain/Sprain	Toxicosis	Other/Unknown

"Affected Body Parts and Systems Types Selection"

Section of Body	**Body Part or System**			
Body in General	Body (General)			
Head/Face	Head/Face (General)	Eye(s) (General)	Eye (L)	Eye (R)
	Ear(s) (General)	Ear (L)	Ear (R)	Nose

	Mouth	Tongue	Throat	Jaw
Neck	Neck			
Torso	Torso (General)	Heart	Chest	Spine
	Vertebra(e)	Abdomen	Ribs	Back
	Hip	Groin	Buttocks	
Upper Extremities	Shoulder(s) (General)	Shoulder (L)	Shoulder (R)	Arm(s) (General)
	Upper Arm (L)	Upper Arm (R)	Forearm (L)	Forearm (R)
	Wrist(s) (General)	Wrist (L Arm)	Wrist (R Arm)	Hand(s) (General)
	Hand (L)	Hand (R)	Finger(s) (L Hand)	Finger(s) (R Hand)
	Thumb (L Hand)	Thumb (R Hand)		
Lower Extremities	Thigh(s) (General)	Thigh (L)	Thigh (R)	Knee(s) (General)
	Knee (L)	Knee (R)	Shin (L)	Shin (R)
	Calf (L)	Calf (R)	Ankle(s) (General)	Ankle (L Foot)
	Ankle (R Foot)	Heel (L)	Heel (R)	Foot/Feet (General)
	Foot (L)	Foot (R)	Toe(s) (L Foot)	Toe(s) (R Foot)

APPENDIX E

SAMPLE

Figure E-1 "NASA Mishap Report" NF1627 (Carbon Copy Form)

Instructions for NF1627

FIELD	DESCRIPTION
1. Name of Organization	The civil service or contractor organization that is most responsible for the occurrence of the incident. If currently unknown, enter "TBD" (to be determined) as the organization.
2. Mishap Date	Enter date of mishap in MMDDYY format.
3. Mishap Time	Enter time of mishap using 24-hour clock.
4. Org. File No..	The file number that the responsible organization assigned to the case. This field is not required.
5. Mishap Category	Check as appropriate. Refer to NPD 8621.1G for definitions.
6. Close Call	Check as appropriate. Refer to NPD 8621.1G for definition.
7. Level of Potential	Enter a code from the Mishap Category (Item #5) to reflect the potential impact of the actual mishap or close call under differing conditions.
8. Bldg. No./Location	Enter the building number and/or location where the mishap occurred.
9. Specific Area	Describe the exact location of the mishap.
10. Mission Affected	Enter the name or number of the mission, program, or project affected by the mishap. Examples: STS-32; Delta 181.
11. Program Impact	Describe the effect on the mission, program, or project in terms of delay or significant cost adjustment. Example: Two-week launch delay.
12. Description of Mishap	Describe the event including information about the extent of damage and/or injury, conditions that led to the mishap and cause if known at this time. Specify location of facility where medical treatment was provided.
	PERSONNEL INVOLVED
13. Name	Required field. The name of injured or ill person.
14. Age	The age of the affected person.
15. Sex	Required field. The sex of the affected person.
16. Organization (Code) Position	Required field. The organization to which the injured/ill person belongs. Select from the limited list of values.
17. Shift Worked	The shift on which the affected person was working. Choose 1st, 2nd, or 3rd.

18. Hours of Continuous Duty Before Mishap	The number of continuous hours worked by the affected person before the incident occurred.
19. First Aid Only	Check "Yes" if only First Aid treatment was administered to the individual. Check "No" if more than First Aid treatment was administered.
20. Fatality	Check as appropriate
21. Injury Type	Enter code. See Appendix E-3
22. Body Part(s) Affected	Enter up to 3 codes. See Appendix E-3
23. Days Lost	Enter the number of days lost. Check either "Total" or "Continuing".
24. Cause(s) of Injury	Enter codes. See Appendix E-4
25. Mishap Environment	Enter up to 3 codes for Agency and Activity. See Appendix E-4
26. Has employee received training/certification applicable to task?	Check as appropriate. If "Yes" and name of training course or type of certification is know, reference this information in Item #12, "Description of Mishap".
	EQUIPMENT/PROPERTY DAMAGED
27. Class of Equipment/Property Damaged	Check as applicable.
28. Specific Item Damaged	Provide Description
29. Serial/Nems No.	(NEMS—NASA Equipment Management System—number is located on the NASA property tag affixed to each piece of equipment.)

Instructions for NF1627 (Continued)

FIELD	**DESCRIPTION**
30. System/Subsystem Affected	Indicate engineering system and subsystem of class of equipment/property damaged as identified in Item#27. Example: If the class indicated in item #27 is Flight Hardware, the system/subsystem could be "Orbiter/Avionics."
31. Cause(s) of Damage	Enter codes. See Appendix, Page
32. Cost $Estimate $Final	If initial estimate is not immediately known, enter the minimum damage cost for the mishap category selected in Item #5. Provide Final Cost in follow-up report.

33. Submitted By Signature Phone No. Date	
	CORRECTIVE ACTION
34. Action Plan	List planned corrective action, responsible organizations and estimated completion dates.
35. Approved	Signature of appropriate level of management in reporting organization.
36.	**NASA SAFETY CONCURRENCE WITH CORRECTIVE ACTION PLAN**
Concur – Signature – Phone No. – Date	NASA Safety Branch Chief or higher level.
	NASA SAFETY OFFICE USE ONLY
37-40	To be completed by the Chief, Glenn Safety Office.

Codes for Carbon Copy Form

Item 21 "Injury Type"

(H01) Abrasion	(C02) Avulsion	(C01) Amputation	(H02) Bites/Stings	(H07) Punctures
(A00) Burn (Chemical)	(B00) Burn (Thermal)	(Z76) Concussion	(G06) Exposure	(H04) Contusion/Bruise
(I03) Dermatitis	(I96) Multiple Injuries	(E06) Electrical Shock	(I04) Exhaustion	(F07) Fracture
(I06) Hernia	(I00) Inhalation/Absorption/Ingestion	(I09) Internal Injuries	(H06) Laceration	(P00) Pain
(J00) Oxygen Deficiency	(Z68) Shock/Trauma	(G03) Strain/Sprain	(T06) Toxicosis	(Z98) Other/Unknown

Item 25 "Mishap Environment "Agency"

(A) Animals	(B) Boilers/Pressure Vessels	(C) Chemicals	(D) Conveyors	(E) Dust
(F) Electrical Apparatus	(G) Elevators	(H) Hand Tools	(I) Highly Flammable, Hot/Toxic Substances	(J) Hoisting Apparatus (Cranes, Winches, etc.)
(K) Machines	(L) Machines	(M) Mechanical Power/Transmission Apparatus	(N) Prime Movers and Pumps	(O) Radiation/Radiating Substances
(P) Vehicles	(Q) Working/Walking Surfaces (Stairs, Platforms, etc.)	(S) Temperature Extremes	(T) Electrical Current	(Z) Agency Not Elsewhere Classified

Item 25. Mishap Environment "Activity"

A. Striking Against	(B) Struck By	(C) Caught In/On/Between	(D) Fall on Same Level	(E) Fall to Different Level
(F) Slip (not fall)/Trip	(M) Dropped, Spilled, Splashed	(N) Lifting, Moving	(P) Ascending/Descending	(Q) Twisting/Turning
(R) Over-Exertion	(S) Pushing/Pulling	(Z)Activity Not Elsewhere Classified		

Item 24 and 31. "Causes of Injury and/or Damage"

(C) Communications	(H) Human Factors
(1) Paging Warning Inadequate	(1) Distraction
(2) Problem Reporting/Tracking Inadequate	(2) Fatigue
(3) Schedule Conflicts	(3) Safety Violation
(4) Task Coordination/Planning Inadequate	(4) Lack of Experience
(5) Task Supervision Inadequate	(5) Working Environment
(6) Test Team Briefing Inadequate	(6) Lack of Authority
	(7) Lack of Attention
(E) Equipment Failure	(8) Misjudgment of Conditions
(1) Design Deficiency	
(2) Maintenance	(N) Natural Phenomenon
(3) Material Failure	(1) Lightning
(4) Material Defects	(2) Wind
	(3) Rain
(F) Fire/Explosion	(4) Hail
(1) Chemical Change	(5) Earthquake
(2) Fuel/Oxidizer Near Ignition Source	

(3) Pressure Release/Implosion	(T) Organizational Deficiency
(4) High Heat Source	(1) Lack of Training
	(2) Lack of Certification
(A) Handling	(3) Expired Certification
(1) Design Deficiency	
(2) Deviation from Procedure	(P) Procedure
	(1) Requirements Inadequate
(Q) Hazardous Operation	(2) Procedure Deficiency
(1) Arrangement	(3) Technical Data Deficiency
(2) Improper Illumination	
(3) Improper Ventilation	(M) Toxic Material
(4) Improper Clothing	(1) Design Deficiency
(5) Improper Guarding	(2) Improper Handling
(6) Unsafe Equipment	
(7) Deviation from Procedure	
(8) Improper Protection	

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